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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 17, 1945

Scientists of Tomorrow

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A SCIENCE SERVICE PUBLICATION

GENERAL SCIENCE

Science Scholarships

Boy who is a research chemist and a girl metallurgist, both from Brooklyn, win $2,400 each as top students in the Science Talent Search.

See Front Cover

➤ A YOUNG 16-year-old organic research chemist of Brooklyn who has already worked with two classmates to prepare scarce organic compounds for the U. S. Army, won one of the two top-honor Westinghouse $2,400 Grand Science Scholarships in the Fourth Annual Science Talent Search just completed by the Science Clubs of America. He is Edward Malcolm Kosower, a student in the senior class of Stuyvesant High School, New York City.

Top winner among the girls for the $2,400 scholarship is Marion Cecile Joswick, 17, also of Brooklyn, who has picked research metallurgy as her field of scientific work. She has made a collection of fluorescent minerals and has set up and demonstrated apparatus for the microscopic study of diatoms, the algic fossils which form a kind of earth.

Portraits of the top winners are shown on the front cover of this SCIENCE NEWS LETTER.

Eight other high school seniors were selected by the board of judges to receive four-year Westinghouse Science Scholarships worth $400 each, and 30 were granted one-year Westinghouse Science Scholarships of $100 each. All 40 of these high school seniors attended a Science Talent Institute in Washington at which they heard lectures by eminent scientists and had the opportunity of meeting scientific leaders.

SCIENCE TALENT INSTITUTE ***—Alternates for the $2,400 scholarships are shown on the top row of the facing page: left, Robert Hall and right, Nancy Stafford. Center, a group of winners at the National Airport where, with the help of the Weather Bureau, they launched a balloon into the stratosphere. Second row left, Dr. Adams and a group of winners and right Maj. Gen. Osborn, Nancy Stafford, Edward Kosower, Marion Joswick and Robert Hall. The $400 scholarship winners below are: Jerome Blackman, George Clark, Richard Milburn, Saul Kravetz, Michael Tinkham and Andrew Streitwieser. Photographs by Fremont Davis, Science Service Staff Photographer.***

Edward

In addition to the manufacture of scarce chemicals, Edward Kosower has been doing research in an attempt to synthesize pyridazine, one of a group of chemicals from which important medicines are derived. He has not yet succeeded in this, but with his associates, he did develop a new method for synthesizing a form of glutaric acid, which is an intermediate in the synthesis of pyridazine. Other research on the chlorination of fluorene with sulfuryl chloride which he conducted with another finalist in the Science Talent Search has been published in the *Journal of the American Chemical Society*.

Marion

Metals and minerals have engrossed the attention of Marion Joswick since she was eight years old and was impressed with the beauty of a huge mass of translucent beryl at the Brooklyn Museum of Art.

Alternates for the $2,400 Westinghouse Grand Science Scholarships are Nancy Jeannette Stafford, 17, of Watertown, N. Y., who is planning to be a psychiatrist when she can complete her training, and Robert Leonard Hall, 18, of Green Bay, Wis., who is interested in the study of ancient Indian life and other prehistoric man.

An ingenious method for restoring prehistoric pottery vessels that have been unearthed in fragments has been devised by Robert Hall, who has prepared a paper on Indian excavations that has been presented before the Wisconsin Academy of Sciences, Arts and Letters.

Nancy Stafford's essay was written about the use of the Indian arrow poison curare in the treatment of mental illness. She has, herself, done experimental work on animals to determine the effects of this potent drug.

Science News Letter, March 17, 1945

DENTISTRY

Caries May Be Prevented

➤ MAYBE some day in the future we will be able to keep our teeth from decaying by using toothpaste or chewing gum containing tryptophane or by swallowing regular doses of this chemical in the form of tasteless white crystals.

This possibility appears in a report by Mrs. Naomi C. Turner, of Radcliffe College, in the *Journal of School Health* (March).

"The essential amino acid tryptophane," she states, "has distinct promise as a preventive agent for dental caries."

Amino acids are protein building blocks. Certain of them are called essential because the body cannot synthesize them and must have them for growth and health.

Tryptophane's promise of preventing tooth decay is based on the finding that it slows down the rate of starch decomposition. In a previous study of 51 patients at the Forsyth Dental Infirmary Mrs. Turner and E. M. Crane had found a correlation between starch decomposition by the saliva and the amount of caries, or tooth decay, in the mouth. Persons with 20 or more cavities produce saliva which decomposes, or hydrodyzes, starch very rapidly. Persons with little or no tooth decay produce saliva which hydrolyzes starch very slowly.

The finding that a high protein (low carbohydrate) diet has a favorable effect on caries and other findings led Mr. Crane to suggest looking to the amino acids for a material that delayed starch hydrolysis by the saliva.

Mrs. Turner has already tried the effects of doses of tryptophane in one person. Within a week, the time required for starch hydrolysis by this person's saliva had increased from a base rate of 20 minutes to 240 minutes. Whether tooth decay will be prevented, Mrs. Turner says, remains to be established.

Ordinarily, studies of a number of patients would be made before reporting results, but, Mrs. Turner states, she is reporting consistent studies of one individual at this time in order that interested research workers may undertake

simultaneous studies on the effects of tryptophane in reducing tooth decay.

Best dosage and best way of giving the chemical will also have to be determined in future studies.

Science News Letter, March 17, 1945

GENERAL SCIENCE

Future of Science

The development of the study of man depends upon the younger generation whose minds are the least touched by the psychoses of the war.

By MAJ. GEN. F. H. OSBORN

Director, Information and Education Division, Army Service Forces

Address given before the Awards Dinner of the Fourth Annual Science Talent Institute, March 6, 1945.

➤ WE ARE meeting here tonight during one of the critical periods of the life of man on earth. For the first time in human history the cultures of the races and nations of men are merging into one great human culture. This process began some hundreds of years ago with the voyages of Marco Polo. Then India became accessible, North and South America were discovered and colonized, and finally in the lifetime of living men Japan was broken open, the islands and peoples of the Pacific became known, North Africa was explored and Old China began to turn in her century old sleep. The land of the world could be put down on maps and charts. The people of the world could be studied and described by anthropologists. But in vast areas the people retained their old cultures, unaware of other ways of living of the men in other lands.

Now the most terrible of all wars has hastened this change to one world. Using all the technical advances of our scientific age, the war has linked the nations of the globe with air routes, with radio, with the rapidly distributed printed word; men travel by plane today from any spot in the world to any other spot in 60 hours. By the end of this year it may be 40 hours. The voice of Stalin or Roosevelt or Churchill or Hitler is heard instantaneously in any corner of the globe where man has a good enough receiving set. *Yank*, the Army weekly, the first global publication, is printed simultaneously in 20 different spots clear round the world. Never again will any people on this earth be out of touch with what is going on concerning the people in the rest of the world. Not unless we fail.

Unless we fail? Who, we, Americans, we, of the United States, of my generation and of your generation? Are we so important in these critical times? Yes, by a strange turn of fortune, and not at all by our own desires, that is just how important we are. The people of the world are at one of the great cross roads of history. One road leads to a new dark age. The other road leads to a new and better world. And because for the first time we are living in one world, it is no longer possible for different nations to take different roads. Whichever road is chosen, all the people of the world will have to follow it. The choice of roads is hanging in the balance. Many people will wait on the decision of the United States, in many respects the most powerful nation in the world. Our weight, thrown in the balance, will be a mighty factor in deciding which road humankind will follow for a long time to come.

So, now, let us look into the minds and hearts and experience of we the people of the United States, in order to see how qualified we are to make such a choice.

We have some bad handicaps. We must be very frank with ourselves about that. We have lived our whole life as a nation in a very self-contained continent whose vast natural riches have provided materials for the good life without trading with other lands. So we are less conscious than other people of our ultimate dependence, on the rest of the world. Because we haven't had to live on world trade, we don't know the rest of the world as the British and many countries of Europe do. Until just recently we have been isolated or protected by two great oceans, so we haven't had the experience of having to live with our neighbors. Many people actually came to this country in order to get away from oppression in other countries, so many in fact that it became one of our national principles that we could and should live apart from other peoples. But that was before radio and airplanes and robot bombs and rockets.

Finally, and worst perhaps of all, life has been very easy for us compared to the life other peoples have had to live. We've had more land, more food, more roads, more cars, more telephones, more bathtubs, more central heating, more margin of wealth to devote to science, education, music and art, than any other people, though other people worked as hard or harder than we did. Let's be very honest with ourselves.

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Westinghouse Science Scholarships Winners

GRAND SCHOLARSHIPS OF $2,400

Joswick, Marion Cecile, Brooklyn, N. Y.
Kosower, Edward Malcolm, New York, N. Y.

ALTERNATES

Stafford, Nancy Jeannette, Watertown, N. Y.
Hall, Robert Leonard, Green Bay, Wis.

SCHOLARSHIPS OF $400

Stafford, Nancy Jeannette, Watertown, N. Y.
Hall, Robert Leonard, Green Bay, Wis.
Blackman, Jerome, Far Rockaway, N. Y.
Clark, George Whipple, Harvey, Ill.
Kravetz, Saul, Brooklyn, N. Y.
Milburn, Richard Henry, Newark, N. J.
Streitwieser, Andrew, New York, N. Y.
Tinkham, Michael, Ripon, Wis.

ALTERNATES

Parker, Edythe Wilma, Evanston, Ill.
Sessler, Andrew M., Forest Hills, N. Y.
Spink, Walter Milton, Wakefield, R. I.

SCHOLARSHIPS OF $100

Boochever, Lois Lee, Albany, N. Y.
Dale, Alice Beck, Columbia, Tenn.
Gurney, Jean Carolyn, Roslyn Heights, N. Y.
Hodgson, Margaret Joan, Belmont, Calif.
Kaufmann, Renate Mathilde, Evanston, Ill.
Levy, Madeline Lenore, New York, N. Y.
Parker, Edythe Wilma, Evanston, Ill.
Reichart, Ruth, New Rochelle, N. Y.
Wingert, Ann, Madison, Wis.
Anson, John Hahn, LaGrange, Ill.
Conroy, Harold, Brooklyn, N. Y.
Diebel, Robert Norman, Eugene, Oreg.
Dwight, Kirby, Jr., Exeter, N. H.
Ellis, Russell Ray, Neenah, Wis.
Handschumacher, Robert Edmund, Abington, Pa.
Hill, David Allen, Syracuse, N. Y.
Kauer, James Charles, Cleveland, Ohio
Kegelman, Matthew Roland, New Rochelle, N. Y.
Michel, Maynard Cornelius, University City, Mo.
Moore, John Fitzallen, Wilton, N. H.
Petersen, Frederic E'John, Minden, Nebr.
Reed, Charles Orlando, Jr., Troy, Ill.
Rich, Ronald Lee, Washington, Ill.
Royden, Halsey Lawrence, Jr., Phoenix, Ariz.
Sessler, Andrew M., Forest Hills, N. Y.
Sinclair, Robert MacKenzie, Milwaukee, Wis.
Spink, Walter Milton, Wakefield, R. I.
Wahlgren, John Howard, Valley, Nebr.
Walker, Edward John, Detroit, Mich.
Weinberger, Hans Felix, Altoona, Pa.

Judges: Dr. Harlow Shapley; Dr. Steuart Henderson Britt; Dr. Harold A. Edgerton.

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these things have made us a little conceited. We think we're smarter than other people, and we don't admit how much the difference in our living is due to the vast riches of this self-contained continent we're living on and the heritage of freedom and character with which the original settlers were endowed by the culture of western Europe, rather than by any innate superiority of their own. Besides making us a little conceited and critical of other people not so well off, perhaps this comparative wealth and ease of life has made us a little soft? I don't know about that. We can fight a war all right. But can we make sacrifices for a more distant objective such as the unity of the world? Can we refrain from criticizing others 'till we know the facts? Can we order our economic life so as to help and not hinder the economic life of other people in the world? Can we live with our minority groups successfully and yet not let any one of them swerve us from our purposes as a nation? Only time can answer these questions, which are indeed questions of our ability to choose the right road.

Against all these handicaps which have hitherto held us back from taking a full part in the world, we have some very great qualifications which may at long last move us to take a position of wise leadership.

We have the great moral heritage of the Christian religion, which has permeated our lives 'till we are almost unconscious of the sources of our strength, which lie in respect for the individual and belief in the value of each human being, in honesty, fair play, giving the other fellow a chance, in service to others.

We have the great political heritage of the best of western Europe reaffirmed by Lincoln and by this very war, that government of the people, by the people, and for the people shall not perish from this earth.

We have the hope, confirmed by our own experience 'till it is almost a national belief, that we can by our own efforts and brains make the world a better place to live in. No other people hold this belief, this national aspiration, quite so firmly or quite in the same way as we do.

All in all, these things lead me to think that we will make the right choice at this crossroads in the long history of man on earth. Hesitatingly, slowly at first, I believe we will move and when it is clear which way we are going,

VISIT TO CAPITOL—The group of winners met Vice President Harry S. Truman at his office. Left to right standing are: Andrew Sessler, Ruth Reichart, Kirby Dwight, Jr., Lois Boochever, Saul Kravetz, George Clark, Maynard Michel, John Anson, Jerome Blackman, Charles Reed, Nancy Stafford, Andrew Streitwieser, Michael Tinkham, Vice President Truman, John Wahlgren, Edward Kosower, Marion Joswick, Robert Handschumacher, Edythe Parker, Edward Walker, Renate Kaufmann, Jean Gurney, Madeline Levy, Robert Diebel, Halsey Royden, Ann Wingert, Margaret Hodgson, Alice Dale, and James Kauer. Kneeling are: Robert Sinclair, Russell Ellis, Robert Hall, Matthew Kegelman, Frederic Petersen, John Moore, Richard Milburn, Ronald Rich, Harold Conroy, David Hill and Walter Spink.

all those others whose hopes triumph over their fears, who believe in the destiny of man, will find themselves on the same road with us.

This choice will be made by our hearts, or at least by those subconscious inner forces which determine the actions of men and of nations in their greatest moments.

But if our hearts make the right choice, then our brains will have such an opportunity for leadership as the world has never known before. What I am trying to express is best illustrated by this very meeting to honor the junior scientists brought together here.

I venture that no such meeting is going on, or could go on, on such a scale at this time in any other country of the world. I feel sure that no other country in the world after what it has been through in the past six years, could produce forty human minds as unprejudiced, as unconfused, as trained in the clear thinking of the physical sciences, as are the minds of the forty young men and women here tonight, representative of many thousands of other such young and clear thinking minds almost unique to the fortunate background of our country in this period of destruction. Here lies the greatest hope that we can offer, if we move on the road of leadership.

To a very great extent it is the advance of the physical sciences which has made modern civilization possible. Through these sciences man is in a very real sense affecting the conquest of his environment. But it has been at a heavy cost. The very instruments man has devised to increase his physical comfort and security he has turned against himself in terrible destructive wars. The advance of man as a social animal has not kept pace with his advance in knowledge. If we are to use to man's advantage the products of your skills, we must learn better how to rule ourselves and how to live together. For this we must turn to the field of the social sciences.

In the past 30 years, in this country—and in no other country in the world—the social sciences have begun to emerge from arm chair philosophies to at least the rudiments of true sciences, the truth of whose findings can be demonstrated by experiment or by statistical treatment of things that can be measured. Thus for the first time we really know some things about human heredity and individual differences; we really know some things about human psychology, and social behavior under different environments.

We have for the first time some very specific knowledge about the increase of human populations.

We have tools by which we are beginning to be able to measure the effects of social and psychological influences. In other words we are beginning to break open the most difficult, complex, and fascinating science of them all, the science of man.

Your brains of the coming generation trained in the hard close logic of modern scientific techniques; your minds of all the world least touched by the psychoses of the war; your hearts inheriting, if pray God we have properly passed on that heritage, the best in the ethical and religious experience of the race; these brains and minds and hearts may do this job. Here in this our country is the reservoir of such resources; and so I believe we can, if we will, enter into our period of leadership with good hopes that we may acquit ourselves well.

I do not think that we need to spur the coming generation to their task. The immense difficulties which have 'till recently barred access to the sciences of man now offer such a challenge that the ablest and most courageous minds can no longer resist; and only such minds should enter this field. How freely they can work there will depend on the older people of my generation. It is we who need a little heart searching advice.

For we of my generation must recognize that there has seldom been a cleaner break between two generations of scientists than the break between the younger men in the social sciences and the older men in the same field. The younger men are trained in the use of new statistical methods, they have a healthy skepticism of any finding that can't be proved up. The older men, lacking the new techniques, were trained to base their findings on their personal observations. Inevitably, they tend to differ more among themselves. Indeed the use of the word science can hardly be applied to the study of man and his social reactions under these older methods. The true science of man must be developed by the younger men trained in the use of the new tools.

Yet it is the older men who make the decisions as to who shall work and in what field. They still control most of the funds, most of the appointments. They direct the faculties and the courses of instruction. If the older men are wise they will play the role of philosophers rather than technicians. In return for what they give up, they can share in the planning of this greatest adventure of science. They can direct the energies of the able and well-trained younger men to those fields of science in which America can best serve mankind. They can use our great ethical heritage to give the work of these younger men purpose and direction. Then, and then only, can we have faith that the weapons forged by the physical sciences can be turned to the common good, and not become again, as they have in this war, destructive forces suddenly let loose on an untutored world.

"In addition to its use in the synthesis of polycyclic aromatics, the modified Willgerodt reaction should find application in the synthesis of certain aryl-substituted aliphatic compounds. For instance, 10-Phenyl-1-Decene could be prepared from n-Octyl Phenyl Ketone via the Willgerodt, reduction to aldehyde, condensation with malonic acid, and decarboxylation.

"Because of the comparatively smooth course of the modification, I shall attempt many studies which otherwise might have failed for lack of equipment and working material. In the future, I shall try to make a comprehensive study of the method including these possible phases: mechanism of the reaction, a factor which could probably be best determined by using branched-chain aliphatic phenyl ketones and studying the acids obtained from these; use of unsaturated ketones such as those which can be derived from vinyl, allyl, crotyl, and so on; effect of the reaction on such compounds as dibenzoylethanes, dibenzoylpropanes, etc.; the use of selenium and tellurium, the analogues of sulfur, in the reaction; and last, but not least, the effect of organo-metallic reagents on the intermediate thiomorpholide complexes.

"It is interesting to note how the field of organic chemistry develops under scrutiny: from an extremely obscure topic, which, as yet, has occupied a total of one page in the Journal of the American Chemical Society, it expands so that a complete study such as I have outlined above would take years to complete. And, as far as possible, I will complete it."—From the essay of Edward Malcolm Kosower.

"Today, in our complex civilization, we could not exist without metals. Metals have pictured the progress of civilization. Certain stages in man's advancement are designated by such names as 'Gold Age,' 'Bronze Age,' 'Copper Age,' and 'Iron Age.' Metals are the basis of modern industry and we would be lost without them. I, for one, should like to become a part of this living, breathing creature called 'industry.' For me, the greatest glory would be in playing a leading role in the life of the metals. It would be of the greatest honor, and I should feel that a privilege had been bestowed upon me if I could actively participate in developing this exciting field.

"I now know that I should like to become a research metallurgist. I wish to know more about these fascinating metals—from the moment they are torn from the dark caverns of the earth and separated from their ores, until they emerge as the thousand and one different articles without which life today would be much less comfortable.

"It is my firm intention to enter a school of high standing where I may earn a degree in metallurgical engineering, then when I have acquired this background and training, I will go forth into the industrial world and attempt to become a helpful, useful cog in the machine which is carrying on the work of the world."—From the essay of Marion Cecile Joswick.

NUTRITION

Study of Hungers Affords Scientific Opportunity

By DR. WARREN B. MACK

President, American Society for Horticultural Science; Head, Department of Horticulture, Pennsylvania State College

Address given before the Science Talent Institute.

➤ HUNGRY plants and hungry people open many fields of study for the young scientist. Thus far, scientists have only begun to find the nature and extent of the hungers that exist. Much more knowledge is needed on these aspects of hunger before an understanding can be attained of the ways in which the existing hungers may be satisfied.

Examples of studies on hungry plants and hungry people are the two researches now in progress at Pennsylvania State College. One of these, known as the Pennsylvania Mass Studies in Human Nutrition, has been in progress during ten years under the direction of Dr. Pauline Beery Mack, Director of the Ellen H. Richards Institute. In this study, a staff of medical and dental scientists, chemists, physicists and geologists has examined individuals and families selected to represent the population of certain cities, towns and rural areas in Pennsylvania in the same proportions as the various racial, age, economic, and social groups that occur in the respective population. Records are kept of the foods eaten by the persons examined, and these are compared with the nutritional status or condition of these persons or families. Measurements of nutritional status include medical and dental examination, physical measurements to show body build, development, posture and conformation, chemical analyses of body fluids to find their content of vitamins, minerals and proteins; microscopic examination of the skin and tissues of the eyes, mouth and tongue, X-rays of bone to reveal structure and mineral content, and measurements of certain functions known to be related to the nutrition. The studies include also observation on the improvement in various respects brought about by certain foods and dietary supplements added to the diet of certain groups on an experimental basis.

The study of plant nutrition engaged in by Dr. Mack is one which has been carried on by Dr. Walter Thomas, plant physiologist of the laboratory of plant nutrition of the Department of Horticulture at Pennsylvania State College during more than 35 years, the last 10 with the cooperation of Dr. Mack. In these studies, the mineral nutrition of crop plants grown by commercial methods had been analyzed by determining the concentration and proportion of chemical nutrients in selected leaves, the plant organs in which important syntheses occur. These concentrations and proportions are determined from time to time during the growth of the plant, and are related to the development and yield of the plants, as well as to the different fertilizers, cultural practices, and climatic conditions to which the plants were subjected.

Both of the research studies described have shown that plants as well as humans are suffering from many varieties of hunger. They indicate that, to satisfy these hungers, not only must new foods and nutrients be adequate and of the right kind, but also they must be in the proper proportion. They show also that hungry plants result in hungry animals and hungry people, because they do not supply the qualities needed to satisfy the hungers of the final consumer. Vast areas of soil in this country either lack the nutrients or supply the improper proportions to nourish fully plants, animals and people living on them. Studies similar to these pioneer researches at Pennsylvania State College are yet to be made in most of the country, but are needed if our increasing population is to be well fed; they offer abundant opportunity for great numbers of talented young scientists.

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PHYSIOLOGY

Inheriting Atoms

➤ EVIDENCE of great economy in the animal body's use of mineral elements is offered in a study by Prof. G. Hevesy of the University of Copenhagen, on "tagged" atoms of artificially radioactive phosphorus in laboratory mice. The research is reported in a testimonial volume celebrating the sixtieth birthday of the noted physicist, Prof. Thé Svedberg of the University of Uppsala, recently published in Sweden, copies of which have just been received in this country.

Prof. Hevesy injected into the bodies of pregnant female mice a solution of a phosphate which had been rendered artificially radioactive, so that the atoms could be detected by suitable apparatus wherever they turned up. After the young mice were born, one was immediately killed and its body tissues analyzed to find how much of the maternal dowry of "tagged" phosphorus had been passed on to it. After three months, when the new mice were full-grown, another was killed and similarly analyzed. It was found that 40% of the phosphorus concentration present in the newborn mouse still remained in the body of its littermate three months later.

In another series of experiments, the radioactively "tagged" phosphorus atoms were traced through three generations. The concentration in the granddaughter mice was found to be six-tenths of one per cent of what it had been in their mothers at birth.

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BOTANY

Embryo Corn Plants Grown in Lab Vials

➤ EMBRYO corn plants, tucked tightly away in recently formed grains, are carved out and grown in sterile laboratory vials, by a technique developed at the California Institute of Technology. Prof. A. J. Haagen-Smit, with R. Siu and Miss Gertrude Wilson, report details of the new method in *Science*, (Mar. 2).

The grains are cut under aseptic conditions with a very sharp, narrow razor blade, and the little plants are lifted out with spear-shaped dissecting needles. They are fed on a solution containing sugar and other materials necessary for growth.

In earlier work done elsewhere, embryo jimsonweed plants had to be given a little coconut milk in addition to the regular nutrient solution. It was found, however, that the corn embryos would grow without this particular kind of infant food.

Laboratory cultivation of plant "incubator babies" is sometimes necessary when plant hybrids are being produced, because in some cases these hybrids, though desirable for scientific purposes, are unable to grow if the seed is planted in the ordinary manner.

Science News Letter, March 17, 1945

MEDICINE

Penicillin for Civilians On Sale at Drug Stores

➤ PENICILLIN for civilians is now on sale at drug stores. On March 15, the War Production Board lifted restrictions on the life-saving mold chemical and made it available through normal trade channels to all hospitals and physicians.

You will be able to see and perhaps to buy the chemical but it will be put up in form for hypodermic injection for your doctor to give you. There is not yet enough of the material for use in manufactured products such as pills, ointments, lozenges and other forms which the layman might use himself. If and when it becomes available in such form, the Food and Drug Administration will decide whether it may be sold without a doctor's prescription.

Between March 15 and March 31, 1,280,000 vials, each containing 100,000 units of penicillin, will be released, WPB states. In April and each month thereafter, an additional 1,500,000 vials, approximately, will become available. The 2,700 civilian hospitals that have been getting penicillin through special arrangement with WPB have been using about 400,000 vials a month.

Supplies exported via the Foreign Economic Administration will not be affected by release of the drug for general civilian use in this country. WPB plans within the next two months to increase the allotment for export also.

The fact that penicillin can now be made available for civilian use generally is due, WPB states, to the cooperation and stupendous production job of the penicillin industry and its employees.

Science News Letter, March 17, 1945

MEDICINE

War-Wounded Men Aided by New Devices

➤ TWO DEVICES to help the healing of war-wounded men are among recently patented inventions. One, protected by patent 2,362,466, is an adaptation of the familiar baby-walker to the needs of grown men who need to re-learn the use of their legs. A wheeled framework, hinged and swiveled for greater flexibility, supports a pair of crutch-like members on which the patient may lean as he makes his way about. This device is the invention of Frank E. Carter of Minneapolis.

The second surgical invention, covered by patent 2,362,741, is by Joseph D. Berke of New York City. It is an extension of the now-familiar pin-splint principle to take care of fractures of the jaw. A curved bar goes around the outside of the jaw, with openings for the insertion of bone-securing pins where they are needed.

Science News Letter, March 17, 1945

CHEMISTRY

High Volatile Substances For Food Preservation

➤ SOMETHING new in chemical food preservation methods is offered by Francis K. Baerwald of Berkeley, Calif., for patent 2,370,768. Instead of using a germ-killing preservative that stays permanently in the food, perhaps injuring its quality, he uses a high volatile substance, such as ethylene oxide or methyl bromide. The food is packed in bags of Cellophane or Pliofilm, which are permeable to the vapors of these substances, so that after they have killed the molds and fungi present they soon vanish without a trace. The well-sealed film covering, however, prevents any further entry by spoilage organisms.

Science News Letter, March 17, 1945

IN SCIEN

MEDICINE

Warning Comes to Use Sulfa Drugs With Caution

➤ THERE seems to be growing up a potentially dangerous custom of passing sulfa drugs around the family or even the neighborhood. It starts in a typical case when Junior has a bad sore throat or bad earache. The doctor is called, examines Junior and prescribes a sulfa drug. Junior gets well fast. So fast that mother and all the relatives and neighbors are impressed and mother puts the bottle or box with the remaining sulfa drug carefully away in the family medicine chest. Sometime later she or another member of the family has a bad cold and aching throat. Remembering Junior's speedy recovery after he was given the sulfa drug, she gets out the bottle and proceeds to dose herself or whoever is sick.

This custom is dangerous for a number of reasons. Sulfa drugs are powerful but not completely harmless medicines. That is why most of the 48 states have laws or regulations forbidding their sale except on a doctor's prescription. Some persons have gotten very sick from sulfa drugs. They may have been sensitive to them, in the same way as some people are sensitive or allergic to strawberries or seafood and get sick from taking them. The sulfa drugs may do more than make the sensitive person feel sick. They may cause marked changes in the blood and damage the kidneys.

Another danger in indiscriminate use of sulfa drugs comes from the fact that marvelous as they are, sulfa drugs are not cure-alls. When the doctor prescribed the sulfa drug for Junior he knew that Junior's sickness came from germs susceptible to sulfa drugs. If he was not sure from the symptoms, he took a swab from Junior's throat or a sample of blood and sent it to a laboratory for testing. Junior's mother could not know that her sore throat was caused by the same germs, she could only guess. And she could only guess at how much of the drug to take. The dose for Junior might not be right for her. She ran the risk of taking too much or too little or of wasting precious time taking sulfa drugs when she needed something else.

Science News Letter, March 17, 1945

NCE FIELDS

CHEMISTRY

Ammonium Nitrate Used In Powerful Explosive

➤ A POWERFUL explosive, useful for blasting and demolition purposes, is made out of a substance that hardly rates as an explosive at all, simply by dusting it with a finely powdered mild explosive and setting it off with a small booster charge of TNT. The basic substance is ammonium nitrate, widely used as a fertilizer and in chemical manufactures; the dusting is done with nitro-starch, to the extent of from 0.5% to 3% by weight. A little adhesive of some kind (even corn syrup can be used) helps the two to stick together.

The new, low-cost, easily-made explosive is described in U. S. patent 2,371,000, recently issued to Dr. Walter O. Snelling, research chemist of the Trojan Powder Company, to which concern rights in the patent are assigned.

Secret of success in getting the usually inert ammonium nitrate to rip itself apart with destructive violence seems to be in the even distribution of the provoking explosive, and the chemical pacesetting by the booster charge of TNT. The very fast detonation wave started by the TNT, helped along by the nitrostarch, travels at its initial rate through the entire charge.

Science News Letter, March 17, 1945

ASTRONOMY

Infrared Auroral Display Detected in Night Sky

➤ AN INFRARED auroral display has been detected in the night sky. This radiation of waves, invisible to the human eye and far more intense than the ordinary persistent aurora, is probably due to a large number of nitrogen atoms in the high atmosphere, state Prof. Joel Stebbins, Prof. A. E. Whitford and Dr. P. Swings of the Mount Wilson Observatory of the Carnegie Institution of Washington and Washburn Observatory of the University of Wisconsin.

This strong infrared radiation was first detected in 1940 on a photograph of the great Andromeda nebula made with an infrared filter, they report in the *Astrophysical Journal* (Jan.). In 1944 the infrared sky was found unexpectedly to be of nearly twice its ordinary brightness and to be fluctuating by 10% to 15% within 10 minutes.

"The infrared radiation is obviously much brighter than any other part of the spectrum, including the persistent auroral line at 5577 Angstroms, for which we have never found any effect," the astronomers state. "With allowances for the continuous sky spectrum, the infrared radiation is probably scores of times—perhaps even a hundred times—as strong as the line in the green."

The main source of the radiation is probably near 10,000 Ansgstroms, where it would be between two strong water-vapor absorption bands.

The infrared radiation is believed to be atmospheric because it varies with the distance from the zenith, decreases through the night, and varies irregularly from night to night and from season to season. It is brightest immediately after twilight.

In order to estimate the height above the earth's surface at which the rays are emitted, it is suggested that measurements be made at widely different zenith distances every minute or less, and that they be carried to near the horizon. The radiation should also be studied soon after sunset and before sunrise to find the effect of solar radiation.

Science News Letter, March 17, 1945

ORDNANCE

New Mount Can Deliver High-Angle Cannon Fire

➤ TANK gunners will in future be better able to "shoot upstairs" at such targets as the upper floors of fortified buildings and pillboxes on steep hillsides, thanks to a new gun mount devised by an officer of the Ordnance Division, U. S. Army, Col. Joseph M. Colby of Grosse Pointe, Mich. The mount permits the tank's heavy gun to be elevated to any angle up to 60 degrees, and depressed to 10 degrees below horizontal.

The gun is mounted within a hood of strong armor, which also completely protects the forward end of the recoil mechanism, left vulnerable in many present-type mounts. This hood, in turn, is set in a vertical circular shield, which gives close cover to the gun-port through all degrees of elevation. Traverse of full 360 degrees is provided by the usual turret arrangement.

As is customary with all Service-originated inventions, rights in the patent, No. 2,370,148, are assigned royalty-free to the government.

Science News Letter, March 17, 1945

MEDICINE

Penicillin Successful For Syphilis in Babies

➤ PENICILLIN may restore to health babies born with syphilis, it appears from studies in four university medical schools reported in the *Journal of the American Medical Association* (March 10). The report is signed by Drs. R. V. Platou and Allen J. Hill of Tulane, Norman R. Ingraham of Pennsylvania, Mary S. Goodwin of Johns Hopkins, and Erle E. Wilkinson and Arild E. Hansen, of Texas.

A total of 69 babies have been treated by the group. Of these, 39 have been followed for from four to 12 months. Twenty-five of these are now "physically normal" and blood tests are negative in 21, doubtful in four. Another nine of the babies are "also well" although their blood tests are still positive.

Clinical relapse in two and serologic relapse in five babies occurred. Five of the 69 babies died, three of them soon after or during treatment. These three had active syphilitic sores, were under two months of age and in poor general condition. Whether the two deaths five and 14 weeks respectively after treatment were due directly or indirectly to penicillin or syphilis is not known.

Best dosage schedules for penicillin treatment of congenital syphilis in infants, the doctors report, has yet to be worked out.

Science News Letter, March 17, 1945

CHEMISTRY

Polymerized Silicones Produce New Substances

➤ SILICONES, the new family of organic compounds of silica that have already created a considerable stir in chemical society, are joined by a group of new members described in patent 2,371,050, obtained by Dr. James F. Hyde, of the laboratories of the Corning Glass Works.

Dr. Hyde polymerizes silicones, with the addition of other chemical elements, to make new resin-like substances of remarkable physical properties, ranging from tough and rubbery to hard and brittle, with high resistance to both heat and electricity. As an example, phenyl ethyl silicon, used as an impregnating agent in glass-fiber cloth, produces an insulating material of double the electrical resistance of standard varnished cloths now on the market.

Science News Letter, March 17, 1945

MEDICINE

Malarial Volunteers

More than 200 volunteers in federal and state prisons are taking part in tests of new drugs; follows historic yellow fever studies.

➤ FOLLOWING in the footsteps of the American soldiers who nearly 50 years ago voluntarily risked yellow fever death to help conquer that deadly plague, more than 200 volunteers in federal and state prisons have been playing the roles of human guinea pigs for final testing of new antimalarial drugs.

Announcement of this phase of our war on malaria comes from the committee on information of the division of medical sciences of the National Research Council.

The tests as well as preliminary studies leading to development of new antimalarials and their testing on birds and monkeys have been under the supervision of the board for the coordination of malarial studies, a joint body composed of representatives of the Army, Navy, Public Health Service, Office of Scientific Research and Development and National Research Council.

Results of the tests, started last March, are not given in the detailed announcement of how they are carried out. The three institutions from which prisoners have volunteered are the U. S. Penitentiary at Atlanta, Ga., the Illinois State Penitentiary at Joliet, and the New Jersey Reformatory at Rahway.

Some of the prisoners will undoubtedly get malaria, since a certain number must be left untreated to make sure the mosquitoes that bite them and the other volunteers actually are carriers of the disease. The others may or may not get malaria depending on the efficacy of the new remedies being tested. Those getting the remedies, especially those used to test for best dosages, run the risk of getting sick from the drugs if they turn out to be more toxic than expected.

The testing program grew out of the military importance of malaria in the present war and the need for more effective weapons against this disease than those now available.

"Quinine and atabrine," the announcement explains, "are very efficacious drugs in suppressing the clinical attacks of vivax (benign tertian) malaria, but neither is capable of eradicating the disease completely once a person has become infected. The large number of men returned to the United States with recurring attacks of this type of malaria attest to the incomplete worth of available drugs against this disease.

"In the field of mosquito-killing agents the recently discovered compound DDT has been phenomenally effective, but no insecticide has yet been found which can kill all mosquitoes under all situations. Engineering control methods, although effective in local areas, are too costly to be the complete answer to malaria in the tropics.

"The highest hope, therefore, is for a specific drug that will actually cure or prevent malaria."

Science News Letter, March 17, 1945

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CHEMISTRY

Helium Storage Reservoir

➤ A GIGANTIC underground helium storage reservoir will soon be in use in the 50,000-acre government-owned Cliffside natural gas field near Amarillo, Texas, to hold for future use surplus helium gas not now needed by military and other government agencies, or by American industries. A new pipeline, 32 miles in length, now connects the government helium plants at Exell, and Amarillo, Texas, and extends to the oil-field reservoir. The surplus gas will flow through these pipelines to the natural underground storage place.

The helium piped back into the ground must be repurified later when it is withdrawn for use, but the gas taken from the cache will be richer in helium content.

Since 1923 the Cliffside field has produced enormous quantities of natural gas from which millions of cubic feet of helium gas were separated by the U. S. Bureau of Mines, and up until the present war was the principal source. The Bureau now operates five plants, and is producing 25 times as much helium as in prewar days. This accounts for the surplus. The government is the only producer of this valuable gas.

Helium has a wide variety of military uses and is also used widely in scientific and industrial operations, a use that undoubtedly will greatly expand after the war. It is used principally in balloons and airships to replace hydrogen because it does not burn. It is so inactive chemically that it has no compounds. Flaming bullets or atmospheric electricity have ignited hydrogen in balloons and dirigibles, but never helium. A mixture of 80% helium and 20% hydrogen is noninflammable. Helium has twice the density of hydrogen, but its lifting power as used in airships is over 90% as great.

An important use of helium in industrial operations is in welding, to protect the parts being welded from oxidation or other chemical reaction. It has lately been used experimentally in the treatment of asthma.

Science News Letter, March 17, 1945

HOBBY NIGHT—Marion Joswick's exhibit shows the phenomenon of fluorescence, Nancy Stafford displays a study of curare, and Edward Kosower has developed a new procedure for synthesizing a form of glutaric acid. Second row, George Clark's display shows the extraction of rare earths from Brazilian monazite sand, Robert Handschumacher's specialty is the fractional distillation of petroleum, Russell Ellis built a spectroscope. Third row, John Anson demonstrates his audio amplifier, Robert Sinclair explains the theory of projectiles, and John Wahlgren has a demonstration of atomic structures. Fourth row, John Moore exhibits one of the applications of the polynominal theorem, Maynard Michel shows his electric arc furnace, Richard Milburn talks on a beam of light, and Robert Hall displays his method of restoring Indian relics.

Do You Know?

Alcohol and aluminum may be on the crucial list throughout 1945.

Agar is also known as Japanese, Chinese, Bengal or Ceylon isinglass.

Pyrethrum for insecticides, grown principally in Japan in prewar days, is now being experimentally raised in Ceylon with promising results.

Penicillin is being produced on a commercial scale by 21 plants in the United States and Canada, as well as by many others in foreign countries.

Naphthalene flakes placed under the drainage hole of a flower pot will release vapor that will rise inside the pot and kill tiny worms.

Tomatoes were the outstanding favorite vegetables grown by Victory gardeners during the past war years; onions and cabbage were high in favor.

Glass-lined containers in the chemical industry have grown greatly in favor and use because they withstand the corrosive action of all acids except hydrofluoric, and of many other chemicals.

Brewer's yeast, a by-product of beer-making once largely wasted, is a first-class protein food for poultry and farm animals, as it is rich in all the important vitamins of the B-group.

Waxy corn, to replace supplies of tapioca obtained from the East Indies before Pearl Harbor, was grown last year on nearly 16,000 acres in Iowa alone, yielding an average of 55 bushels an acre.

Over 10,000 tons of *animal bones* were imported annually in prewar years from France, Africa, South America and India by Swiss factories that produced industrial fats, glue and fertilizers.

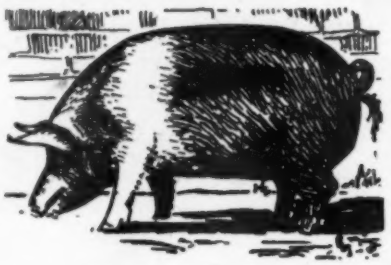
Infra-red rays are used to photograph valuable old paintings to aid research into the techniques of the old masters; they penetrate through the upper layers of paint and reveal the subsurface modelling.

Bituminous *coal output* per miner per day in America averages over five tons, while in England it is only slightly over one ton; the wide use of mining and loading machinery in this country is partly responsible.

AGRICULTURE

NATURE RAMBLINGS

by Frank Thone



Pigs and Potatoes

➤ IRELAND owes much to the pig, more to the potato. A small country of small farms, having moreover to endure the drain of foreign exploitation through much of its history, Ireland simply had to be able to offer its people cheap, easily produced food if they were to survive, let alone increase to the emigration point as they have notably done. Pigs and potatoes, both prolific even in limited space, are par excellence the poor man's meat and bread. It is not through mere whim that the image on the Saorstat's half-penny piece is not the face of a sovereign or a national hero but the figure of a fat sow and her squealing brood: Ireland owes much more to her pigs than to her politicians, any day.

Yet the pig is not native Irish. Apparently all the domestic pigs in the world came originally from somewhere in Asia, perhaps China. However, Ireland had pigs before she even had a history —and Irish history is long. And if anything were needed to naturalize the pig, making him Irish forever, it would be the fact that St. Patrick himself served as a swineherd, when as a youth he was kidnaped into serfdom under a pagan master.

The potato, being a gift of the New World, came to Ireland much later, and well within the frame of written history. Coming from high-altitude country in the southern hemisphere, this root crop adapted itself readily enough to the cool, moist climate of Ireland's northern high latitude, where corn, the other great bulk-feed plant from America, would not thrive.

Legend says that the potato was introduced into Irish cultivation by a philanthropic Englishman, Sir Walter Raleigh. There is an interesting old woodcut showing the elegant Sir Walter standing in a potato field, supervising the digging of the first crop of tubers. Incidentally, Sir Walter is shown smoking a clay pipe —an obvious ancestor of the "dudeen" of a thousand comedy-Irish caricatures. If he really did bring to Ireland the comfort of tobacco as well as the solid sustenance of the potato, Sir Walter would almost seem to rate an advance in title to St. Walter, and a place not too far back of St. Patrick in the parade on the Seventeenth of March.

Science News Letter, March 17, 1945

Corn cribs constructed by early American Indians were built of cane.

Phosphate drinks, given cattle in sections where the soil is deficient in phosphorus, result in more productive breeding and better gains by calves; disodium phosphate and defluorinated triple superphosphate are used.

Facts ABOUT

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2:15 EWT—CBS

Science Service Radio Feature

RCA Laboratories model with an 18 by 24-inch screen showing how Bob Hope may appear on future home television.

Dr. D. W. Epstein with a projection television tube, reflector and lens unit. Here the image on the end of the tube hits the reflector, is corrected by the lens, projected to the screen, then enlarged . . . making possible larger and clearer television than ever before.

New Projection Television - *Bob Hope's face "big as life"*

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RCA Projection Television sets can have 18 by 24-inch pictures, or for that matter, pictures as large as the screen in a "movie" theater!

When you tune in an NBC television broadcast you'll almost think the actors are in the same room with you—and trust NBC, America's No. 1 network in sound broadcasting, to bring you the best in television entertainment.

This revolutionary improvement was achieved in RCA Laboratories by development of an entirely new reflector and lens, shown in phantom above. This lens, of inexpensive plastic, is 8 times as efficient for the purpose as the finest optical lens.

When you buy an RCA radio, phonograph or television receiver—or any other RCA product—you receive the benefit of the latest research development of RCA Laboratories. It is this *plus value* which is your assurance of lasting satisfaction.

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PIONEERS IN PROGRESS

RCA

• Books of the Week •

➤ POSTWAR uses of plastics as well as wartime applications, figures giving details of the tremendous growth of this industry where the consumption of plastics materials has been multiplied about six times in six years, and information on recently developed materials such as silicones and polectrons are given in the 1945 PLASTICS CATALOG, (*Plastics Catalog Corp.*, $6).

Science News Letter, March 17, 1945

➤ THE COMET OF 1577, visible in most of Europe and in Asia, made it possible for Tycho Brahe and a small group of his contemporaries to prove that comets do not enter the earth's atmosphere, but are farther away from the earth than the moon. C. Doris Hellman gives the comet its proper place in the history of astronomy by tracing the development of theories on comets up to that year and discussing representative bits of the literature about THE COMET OF 1577. (*Columbia Univ. Press*, $6.)

Science News Letter, March 17, 1945

➤ THE SCIENCE of navigation, in language understandable to the average boy of high school age, is discussed in PRACTICAL MARINE NAVIGATION, by James A. Stowell, a text book for beginners. The author has had years of experience both at sea and in professions connected with it. The book covers subjects and problems used in everyday navigation. (*Wesley*, $2.50.)

Science News Letter, March 17, 1945

➤ HOW ASTRONOMERS can find out so much about the stars is told in TELESCOPES AND ACCESSORIES by Dr. George Z. Dimitroff and Dr. James G. Baker of Harvard College Observatory (*Blakiston*, $2.50), which contains a description of the principal instruments and procedures used in astronomical observations. Beginning with a discussion of light itself, the book brings you to the point where you can construct your own photographic telescope for use in the home workshop. You will enjoy reading it as well as learn much about small and giant telescopes which nightly sweep the sky.

Science News Letter, March 17, 1945

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• Just Off the Press •

ALCOHOLICS ARE SICK PEOPLE—Robert V. Seliger—*Alcoholism Publications*, 80 p., $2.

ARCHAEOLOGICAL EXPLORATIONS IN JO DAVIESS COUNTY, ILLINOIS, the Work of William Baker Nickerson (1895-1901) and the University of Chicago (1926-32)—John W. Bennett—*Univ. of Chicago Press*, 168 p., paper, illus., $3.

THE CONSTITUENTS OF WHEAT AND WHEAT PRODUCTS—C. H. Bailey—*Reinhold*, 332 p., illus., $6.50 (Am. Chemical Soc. Monograph Series).

THE DISTRIBUTION OF THE BIRDS OF CALIFORNIA—Joseph Grinnell and Alden H. Miller—*Cooper Ornithological Club*, 608 p., illus., $7.

THE MAGIC POWDER, History of the Universal Atlas Cement Company and the Cement Industry—Earl J. Hadley—*Putnam*, 382 p., illus., $3.50.

NATIONAL FIRE CODES, Vol. I, Flammable Liquids, Gases, Chemicals and Explosives—Robert S. Moulton, comp.—*Nat. Fire Protection Assn.*, 591 p., illus., $3.

PLASTICS, SCIENTIFIC AND TECHNOLOGICAL—H. Ronald Fleck—*Chemical Pub. Co., Inc.*, 325 p., illus., $6.50.

PSYCHOLOGY FOR THE RETURNING SERVICEMAN—Irvin L. Child and Marjorie Van de Water, eds.—*Infantry Journal*, 243 p., paper, illus., 25c.

SMALL FARM AND BIG FARM—Carey McWilliams—*Public Affairs Committee, Inc.*, 31 p., paper, illus., 10c (Public Affairs Pamphlet, no. 100).

WOOD TECHNOLOGY, Constitution, Properties and Uses—Harry Donald Tiemann—*Pitman*, 328 p., illus., $4, 2nd ed.

WOODWORKING PROJECTS FOR INDUSTRIAL ARTS STUDENTS—Gerald Baysinger and Hartley H. Schaal—*McGraw*, 151 p., illus., $1.40.

Science News Letter, March 17, 1945

EMBRYOLOGY

Chemical Structure of Embryos Now Studied

By DR. GEORGE W. CORNER

Carnegie Institution of Washington; Department of Embryology, Baltimore

Address given before the Science Talent Institute.

➤ ALMOST every high-school student of biology begins to study embryology by observing the development of frogs' eggs into tadpoles and adult frogs. The embryology of man and other high animals begins in the same way, by describing the embryo at various stages of growth, to see how the tissues and organs of the body are laid down and unfolded. The advance of modern science, bringing chemistry and physics closer to biology, has added countless new problems and opened new opportunities for explaining the growth of an embryo in terms of its chemical structure. Nowadays an embryological institute, while still based on the microscopical study of individual specimens, is also an experimental laboratory in which the investigators are likely to use such tools as hormones and enzymes, X-rays, and radioactive elements produced by the cyclotron, in order to understand the internal physiology of the embryo.

Science News Letter, March 17, 1945

Muskrats, valuable for both meat and fur, can be grown successfully in captivity, but the plan has not yet been found generally profitable.

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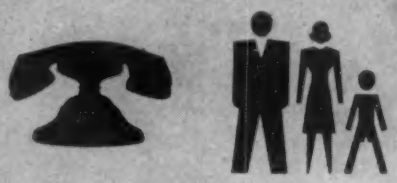
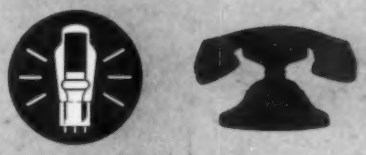


MINOR PREMISE:

Bell Telephone Laboratories develop the facilities of the Bell System.



CONCLUSION:

Therefore, Bell Laboratories serve the American Public.

And that is the *raison d'être* of the Laboratories. For the Bell Telephone System, the Laboratories carry on research studies in all the sciences and development work in all the engineering arts that relate to electrical communication.

For the Western Electric Company, the manufacturing unit of the System, the Laboratories develop equipment, prepare specifications, and engage in various engineering activities.

For the Armed Forces of the United States, under contracts of the Western Electric, the Laboratories have undertaken more than a thousand development projects — many with spectacular effect upon our enemies.

BELL TELEPHONE LABORATORIES ***explore and invent, devise and perfect for our Armed Forces at war and for continued improvements and economies in telephone service.***

• New Machines and Gadgets •

⚙ *SLEEPING BAG, recently patented, has a projection at the head end that can be turned back over the sleeper's head and held by two rods in a sloping position to protect him from rain. A netting, inserted in the side of the bag over the user's face, permits fresh air to enter and keeps mosquitoes out.*

Science News Letter, March 17, 1945

⚙ *COMBINED PRESS for forming plastic articles and an electronic heating unit is in successful operation and is effecting great economies in production time. The plastic articles are quickly molded into shape, and the curing process by high-frequency electric current is a proven success on small parts.*

Science News Letter, March 17, 1945

⚙ *MUD SHOES for boggy land have center flat strips of wood strapped to the feet like skates, and hinged side and toe pieces held horizontally by springs. When pulling the foot out of mud these hinged pieces turn downward, narrowing the tread in a manner somewhat similar to the action of a cow's cloven hoof.*

Science News Letter, March 17, 1945

⚙ *NON-COLLAPSIBLE golf bag, which does not tend to drop from the clubs when leaned against an object, is made of a light fabric, with rigid rings at the top and bottom connected by a slat. It has individual pockets for each club, made of crimped material to hold the clubs in place.*

Science News Letter, March 17, 1945

⚙ *ELASTIC BANDAGE, for minor ailments that require support without rigidity, is made of a fabric interwoven with a vinyl resin yarn that possesses natural elasticity. The picture shows how it is applied. The fabric in use is said to be durable, to retain its elasticity, to be flexible, and to permit circulation and ventilation.*

Science News Letter, March 17, 1945

⚙ *PURIFIED WATER, claimed to be the equivalent of distilled water, is obtained by filtration in a special apparatus in which the water is passed through beds of melamine-derived and other resins. They are reported to transform the dissolved salts in the water to corresponding acids and absorb the acids.*

Science News Letter, March 17, 1945

⚙ *INTERNAL COMBUSTION engine, patented, has no pistons, valves, timing or other conventional parts. Combustion takes place within tubes embedded spirally in a cast rotor. The high velocity of the combustion, traveling to the exhausts, strikes curving spiral walls, thus spinning the rotor.*

Science News Letter, March 17, 1945

⚙ *CUT-OUTS of colored flowers and other designs, to be used for decorating furniture, walls, trays and other household articles are made, like a postage stamp, with a dry paste on their backs. When dipped in water, applied and dried, they remain in place and are fadeproof and washable.*

Science News Letter, March 17, 1945

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 250.

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Question Box

ASTRONOMY

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